70110 U.S. PTO
08/935116
09/22/97

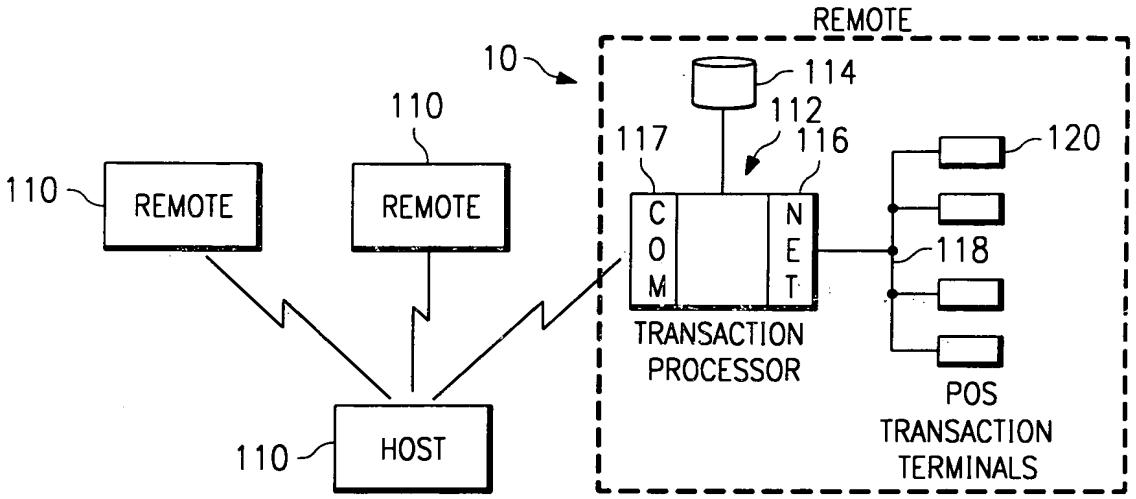



*FIG. 1*

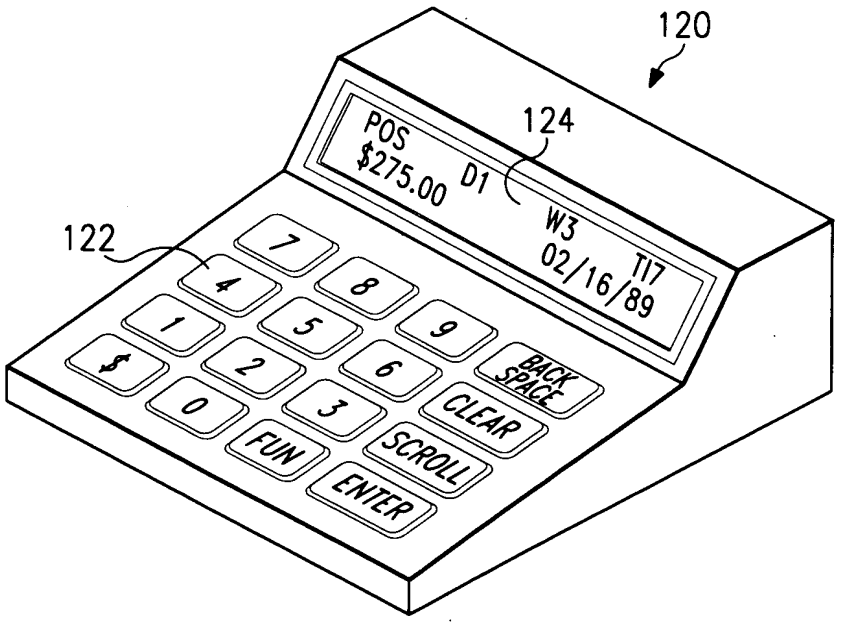



*FIG. 2A*

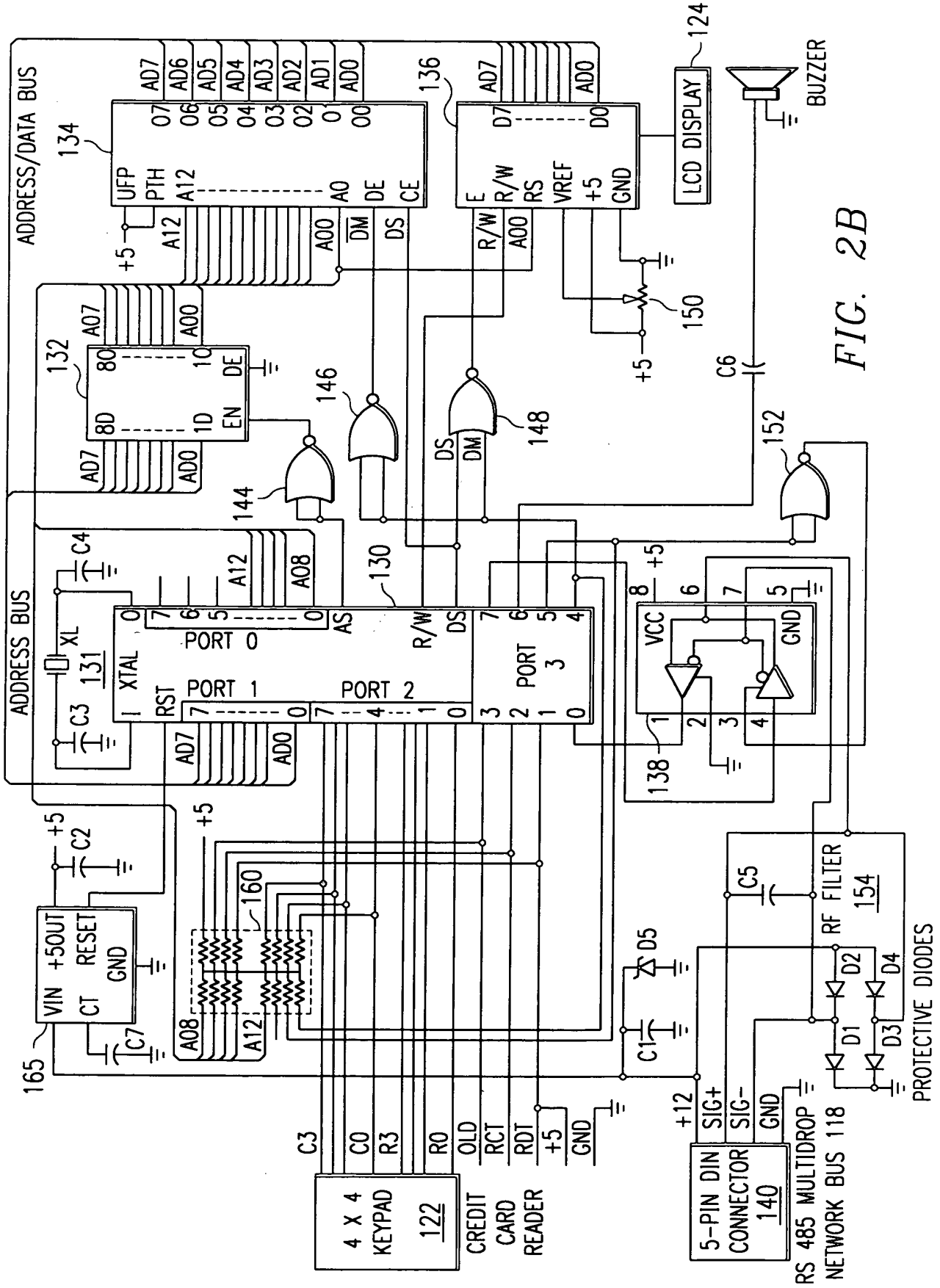
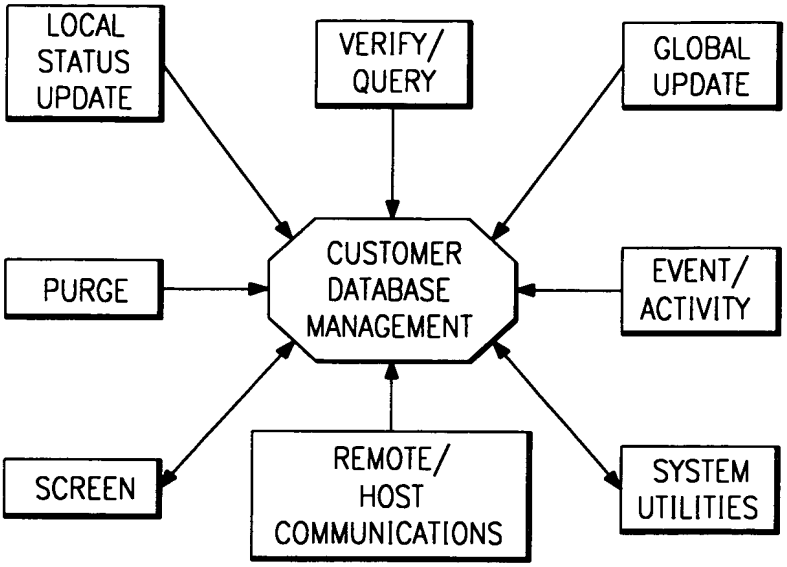

ADDRESS/DATA BUS
ADDRESS BUS
134
136
132
130
131
124
LCD DISPLAY
BUZZER
PORT 0
PORT 1
PORT 2
PORT 3
XTAL
RST
AS
R/W
DS
VCC
GND
VIN +5OUT
CT RESET
GND
4 X 4
KEYPAD
122
CREDIT
CARD
READER
5-PIN DIN
CONNECTOR
140
RS 485 MULTIDROP
NETWORK BUS 118
RF FILTER
154
PROTECTIVE DIODES
150
152
160
165
138
144
146
148

FIG. 2B

FIG. 3


LOCAL STATUS UPDATE
VERIFY/ QUERY
GLOBAL UPDATE
PURGE
CUSTOMER DATABASE MANAGEMENT
EVENT/ ACTIVITY
SCREEN
REMOTE/ HOST COMMUNICATIONS
SYSTEM UTILITIES

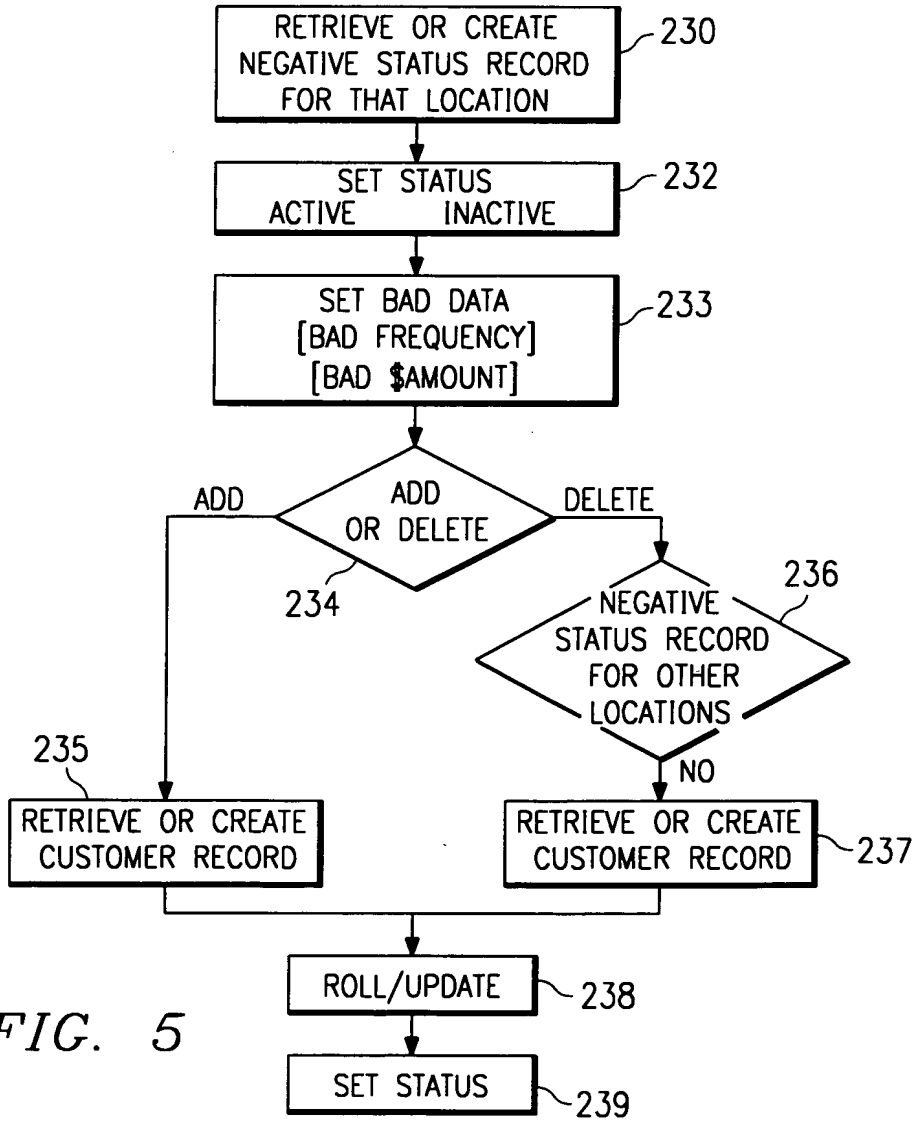

RETRIEVE OR CREATE NEGATIVE STATUS RECORD FOR THAT LOCATION
230
SET STATUS ACTIVE INACTIVE
232
SET BAD DATA [BAD FREQUENCY] [BAD $AMOUNT]
233
ADD OR DELETE
ADD
DELETE
234
NEGATIVE STATUS RECORD FOR OTHER LOCATIONS
236
NO
235
RETRIEVE OR CREATE CUSTOMER RECORD
RETRIEVE OR CREATE CUSTOMER RECORD
237
ROLL/UPDATE
238
SET STATUS
239

FIG. 5

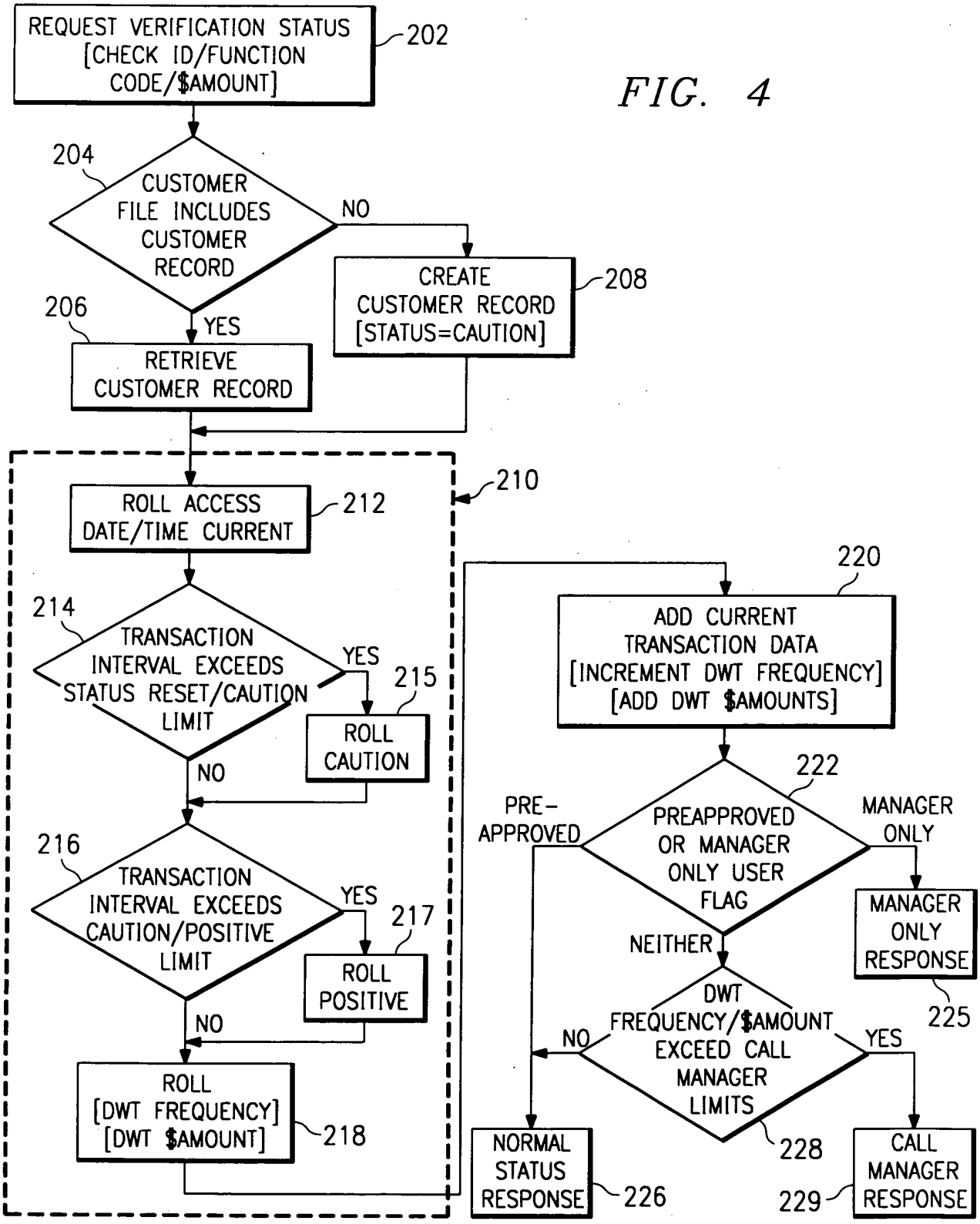

REQUEST VERIFICATION STATUS [CHECK ID/FUNCTION CODE/$AMOUNT]
202
204
CUSTOMER FILE INCLUDES CUSTOMER RECORD
NO
CREATE CUSTOMER RECORD [STATUS=CAUTION]
208
206
YES
RETRIEVE CUSTOMER RECORD
210
ROLL ACCESS DATE/TIME CURRENT
212
214
TRANSACTION INTERVAL EXCEEDS STATUS RESET/CAUTION LIMIT
YES
215
ROLL CAUTION
NO
216
TRANSACTION INTERVAL EXCEEDS CAUTION/POSITIVE LIMIT
YES
217
ROLL POSITIVE
NO
ROLL [DWT FREQUENCY] [DWT $AMOUNT]
218
220
ADD CURRENT TRANSACTION DATA [INCREMENT DWT FREQUENCY] [ADD DWT $AMOUNTS]
222
PRE-APPROVED
PREAPPROVED OR MANAGER ONLY USER FLAG
MANAGER ONLY
MANAGER ONLY RESPONSE
225
NEITHER
DWT FREQUENCY/$AMOUNT EXCEED CALL MANAGER LIMITS
NO
YES
228
NORMAL STATUS RESPONSE
226
229
CALL MANAGER RESPONSE

*FIG. 4*

FIG. 6A

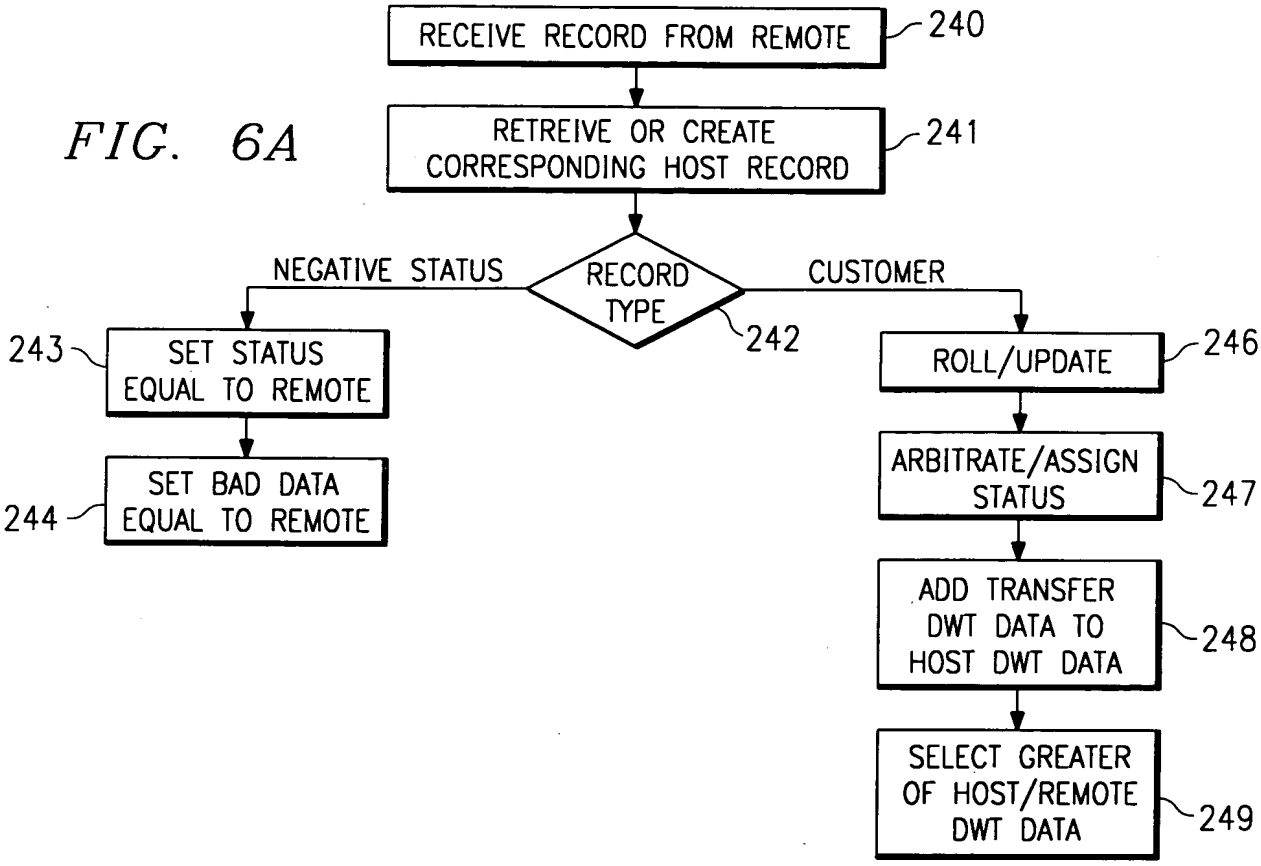

RECEIVE RECORD FROM REMOTE
240
RETREIVE OR CREATE CORRESPONDING HOST RECORD
241
RECORD TYPE
242
NEGATIVE STATUS
CUSTOMER
243
SET STATUS EQUAL TO REMOTE
244
SET BAD DATA EQUAL TO REMOTE
246
ROLL/UPDATE
247
ARBITRATE/ASSIGN STATUS
248
ADD TRANSFER DWT DATA TO HOST DWT DATA
249
SELECT GREATER OF HOST/REMOTE DWT DATA

FIG. 6B

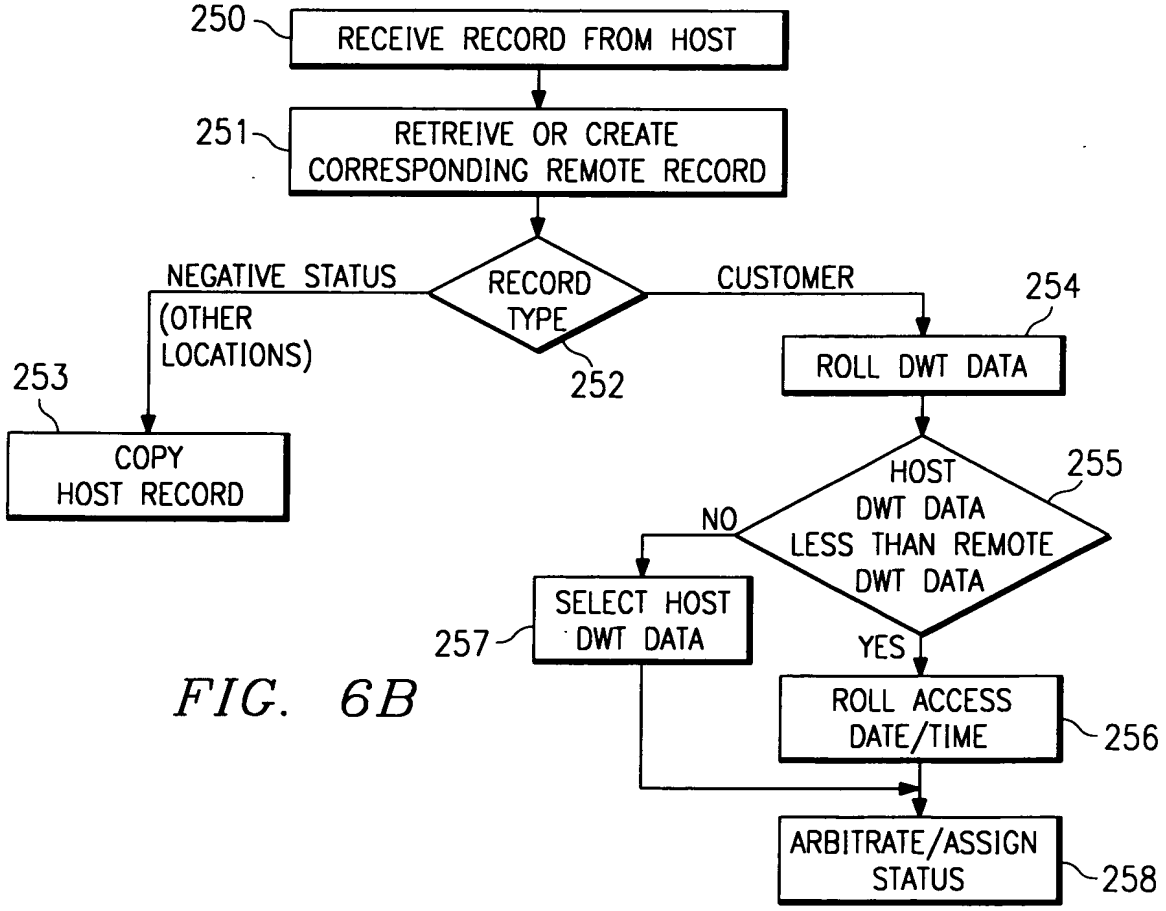

250
RECEIVE RECORD FROM HOST
251
RETREIVE OR CREATE CORRESPONDING REMOTE RECORD
RECORD TYPE
252
NEGATIVE STATUS
(OTHER LOCATIONS)
CUSTOMER
253
COPY HOST RECORD
254
ROLL DWT DATA
HOST DWT DATA LESS THAN REMOTE DWT DATA
255
NO
YES
257
SELECT HOST DWT DATA
ROLL ACCESS DATE/TIME
256
ARBITRATE/ASSIGN STATUS
258

FIG. 7

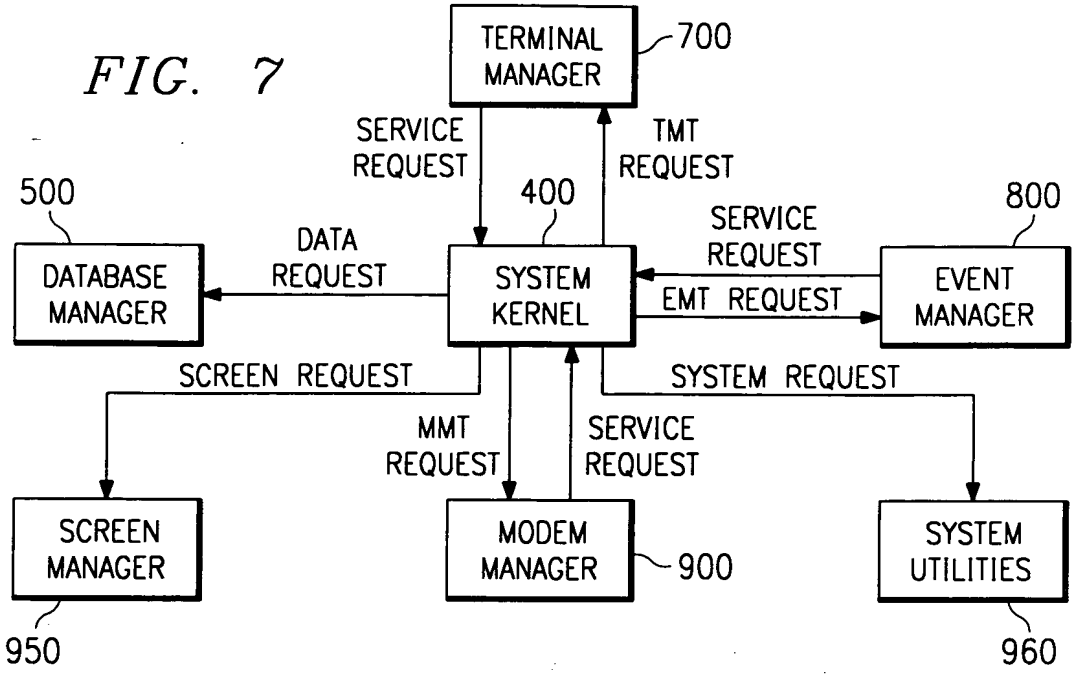
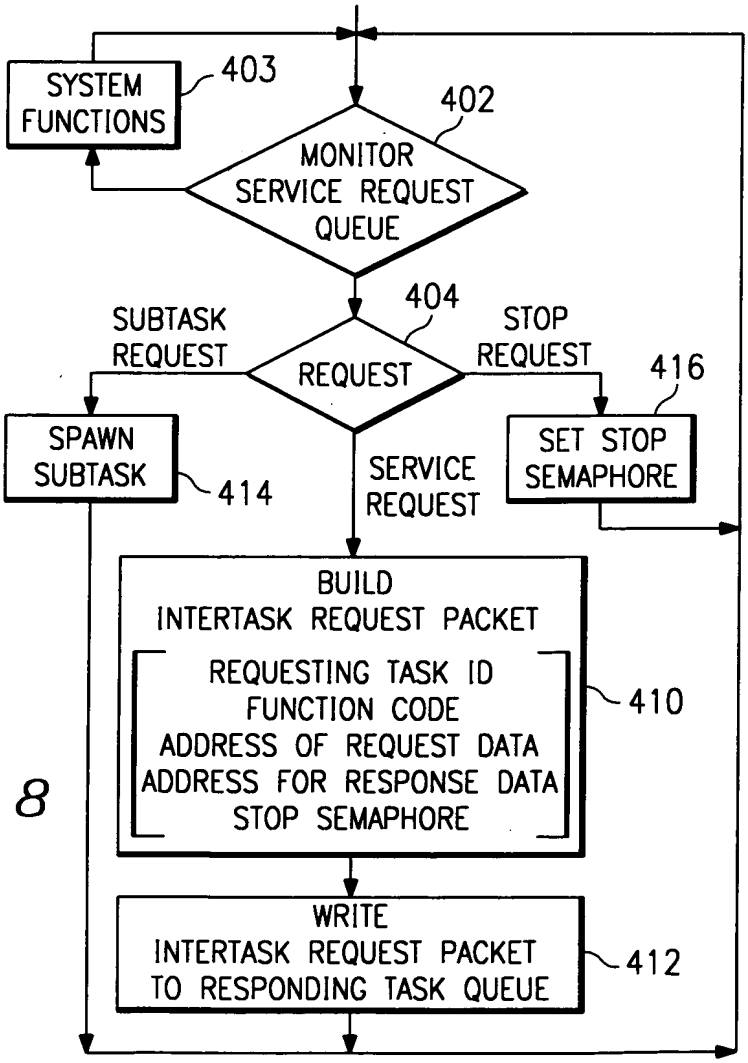

TERMINAL MANAGER
700
SERVICE REQUEST
TMT REQUEST
500
400
800
DATA REQUEST
SERVICE REQUEST
DATABASE MANAGER
SYSTEM KERNEL
EMT REQUEST
EVENT MANAGER
SCREEN REQUEST
SYSTEM REQUEST
MMT REQUEST
SERVICE REQUEST
SCREEN MANAGER
MODEM MANAGER
900
SYSTEM UTILITIES
950
960

FIG. 8


SYSTEM FUNCTIONS
403
402
MONITOR SERVICE REQUEST QUEUE
404
SUBTASK REQUEST
REQUEST
STOP REQUEST
416
SPAWN SUBTASK
414
SERVICE REQUEST
SET STOP SEMAPHORE
BUILD INTERTASK REQUEST PACKET
REQUESTING TASK ID
FUNCTION CODE
ADDRESS OF REQUEST DATA
ADDRESS FOR RESPONSE DATA
STOP SEMAPHORE
410
WRITE INTERTASK REQUEST PACKET TO RESPONDING TASK QUEUE
412

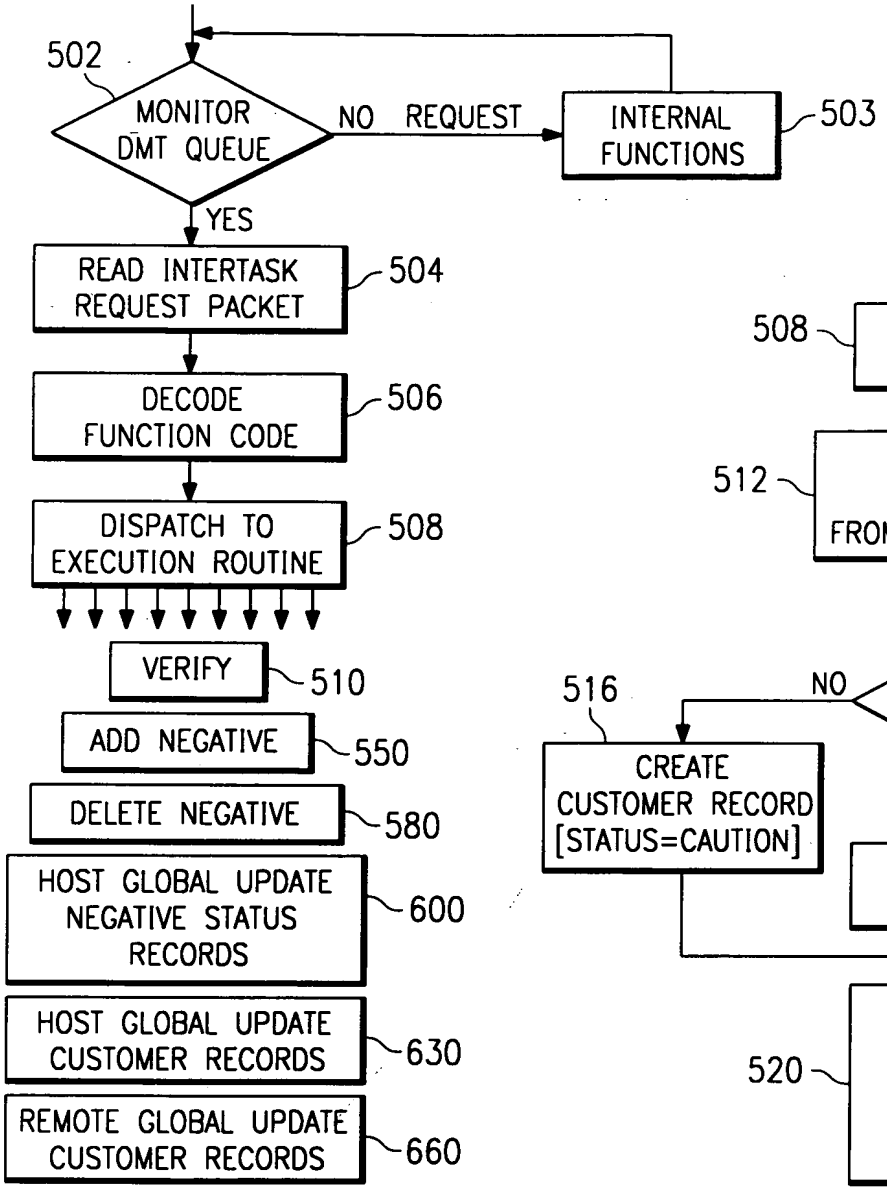

502
MONITOR DMT QUEUE
NO REQUEST
INTERNAL FUNCTIONS
503
YES
READ INTERTASK REQUEST PACKET
504
DECODE FUNCTION CODE
506
DISPATCH TO EXECUTION ROUTINE
508
VERIFY
510
ADD NEGATIVE
550
DELETE NEGATIVE
580
HOST GLOBAL UPDATE NEGATIVE STATUS RECORDS
600
HOST GLOBAL UPDATE CUSTOMER RECORDS
630
REMOTE GLOBAL UPDATE CUSTOMER RECORDS
660

*FIG. 9A*

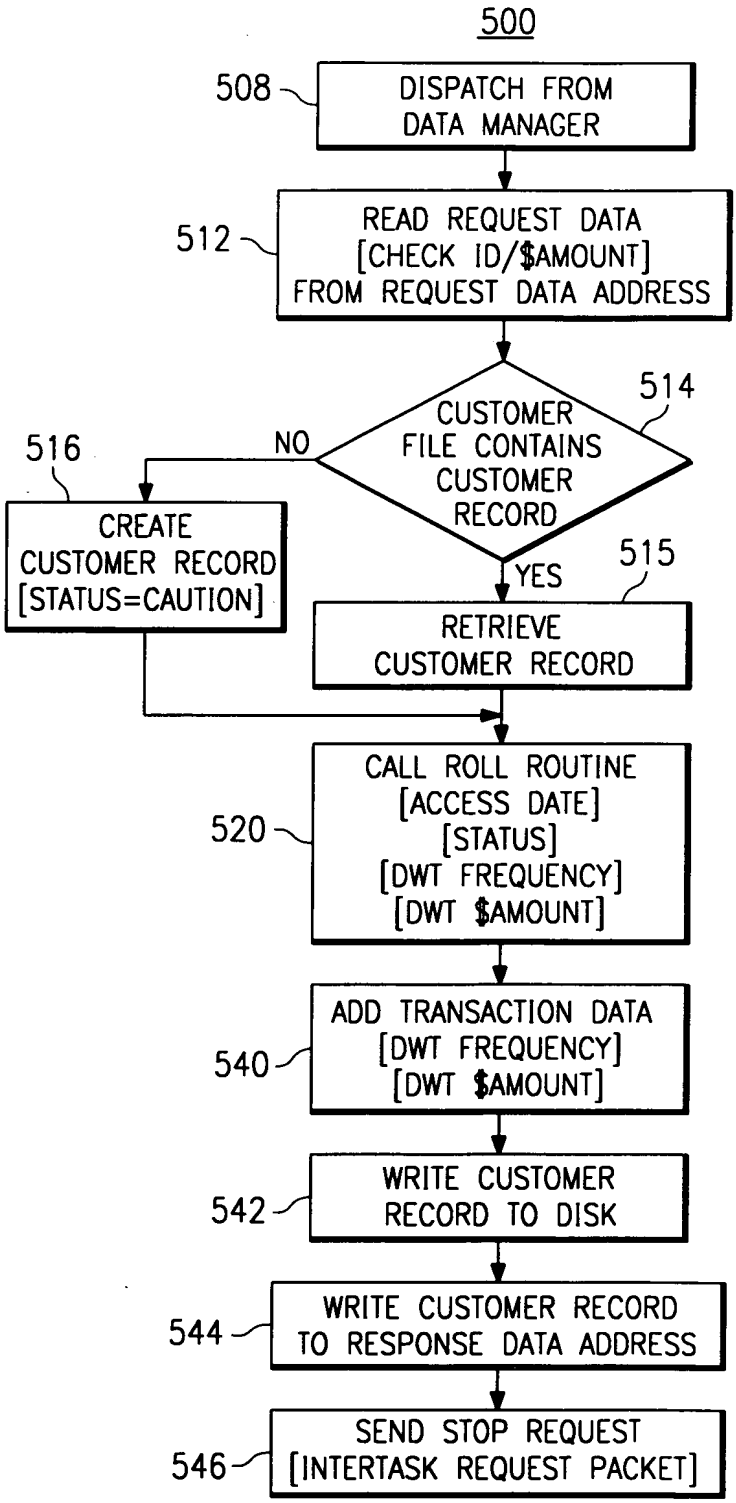

500
508
DISPATCH FROM DATA MANAGER
512
READ REQUEST DATA [CHECK ID/$AMOUNT] FROM REQUEST DATA ADDRESS
514
CUSTOMER FILE CONTAINS CUSTOMER RECORD
NO
516
CREATE CUSTOMER RECORD [STATUS=CAUTION]
YES
515
RETRIEVE CUSTOMER RECORD
520
CALL ROLL ROUTINE [ACCESS DATE] [STATUS] [DWT FREQUENCY] [DWT $AMOUNT]
540
ADD TRANSACTION DATA [DWT FREQUENCY] [DWT $AMOUNT]
542
WRITE CUSTOMER RECORD TO DISK
544
WRITE CUSTOMER RECORD TO RESPONSE DATA ADDRESS
546
SEND STOP REQUEST [INTERTASK REQUEST PACKET]

*FIG. 9B*

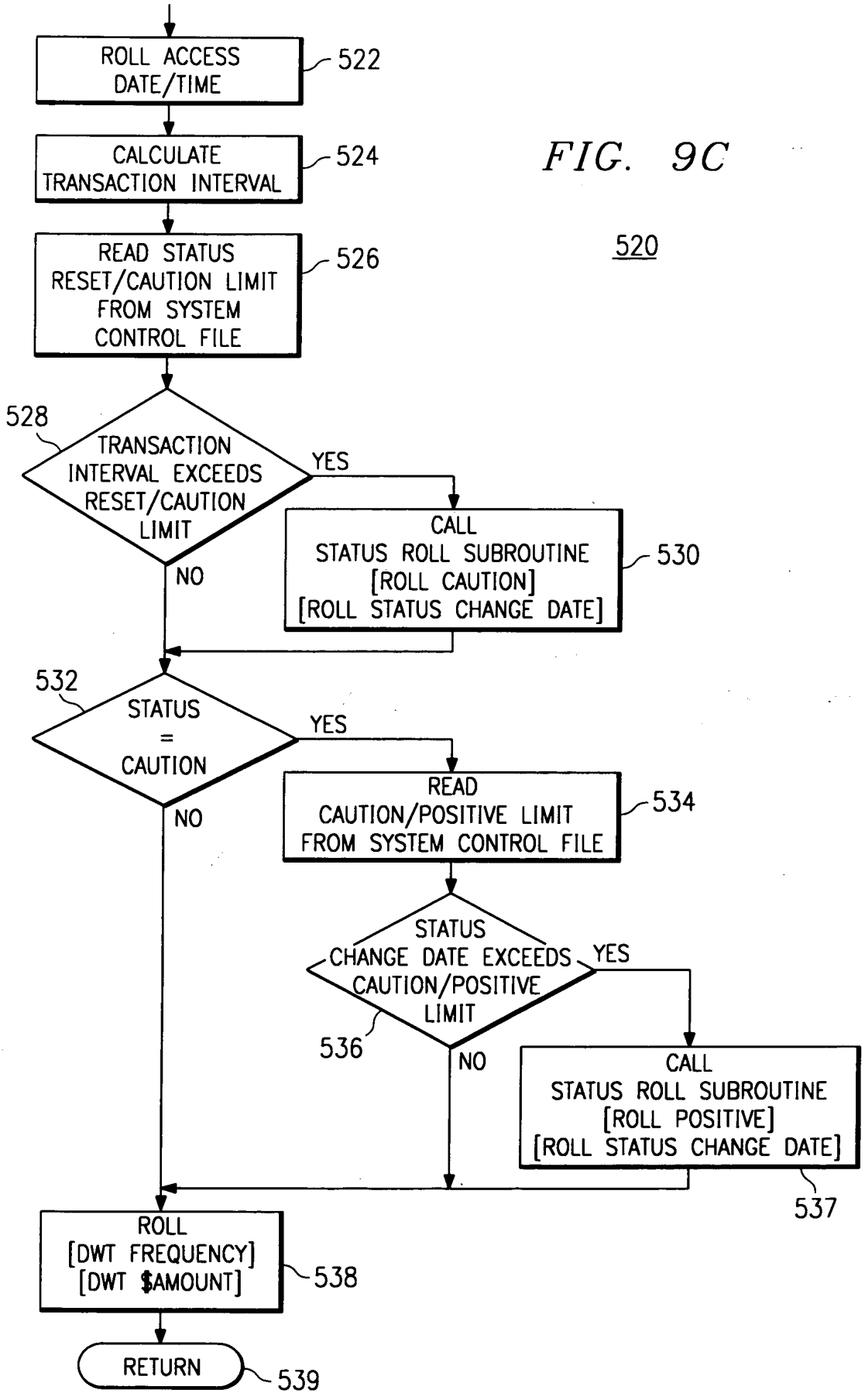

ROLL ACCESS DATE/TIME
522
CALCULATE TRANSACTION INTERVAL
524
READ STATUS RESET/CAUTION LIMIT FROM SYSTEM CONTROL FILE
526
528
TRANSACTION INTERVAL EXCEEDS RESET/CAUTION LIMIT
YES
NO
CALL STATUS ROLL SUBROUTINE [ROLL CAUTION] [ROLL STATUS CHANGE DATE]
530
532
STATUS = CAUTION
YES
NO
READ CAUTION/POSITIVE LIMIT FROM SYSTEM CONTROL FILE
534
STATUS CHANGE DATE EXCEEDS CAUTION/POSITIVE LIMIT
536
YES
NO
CALL STATUS ROLL SUBROUTINE [ROLL POSITIVE] [ROLL STATUS CHANGE DATE]
537
ROLL [DWT FREQUENCY] [DWT $AMOUNT]
538
RETURN
539

*FIG. 9C*

520

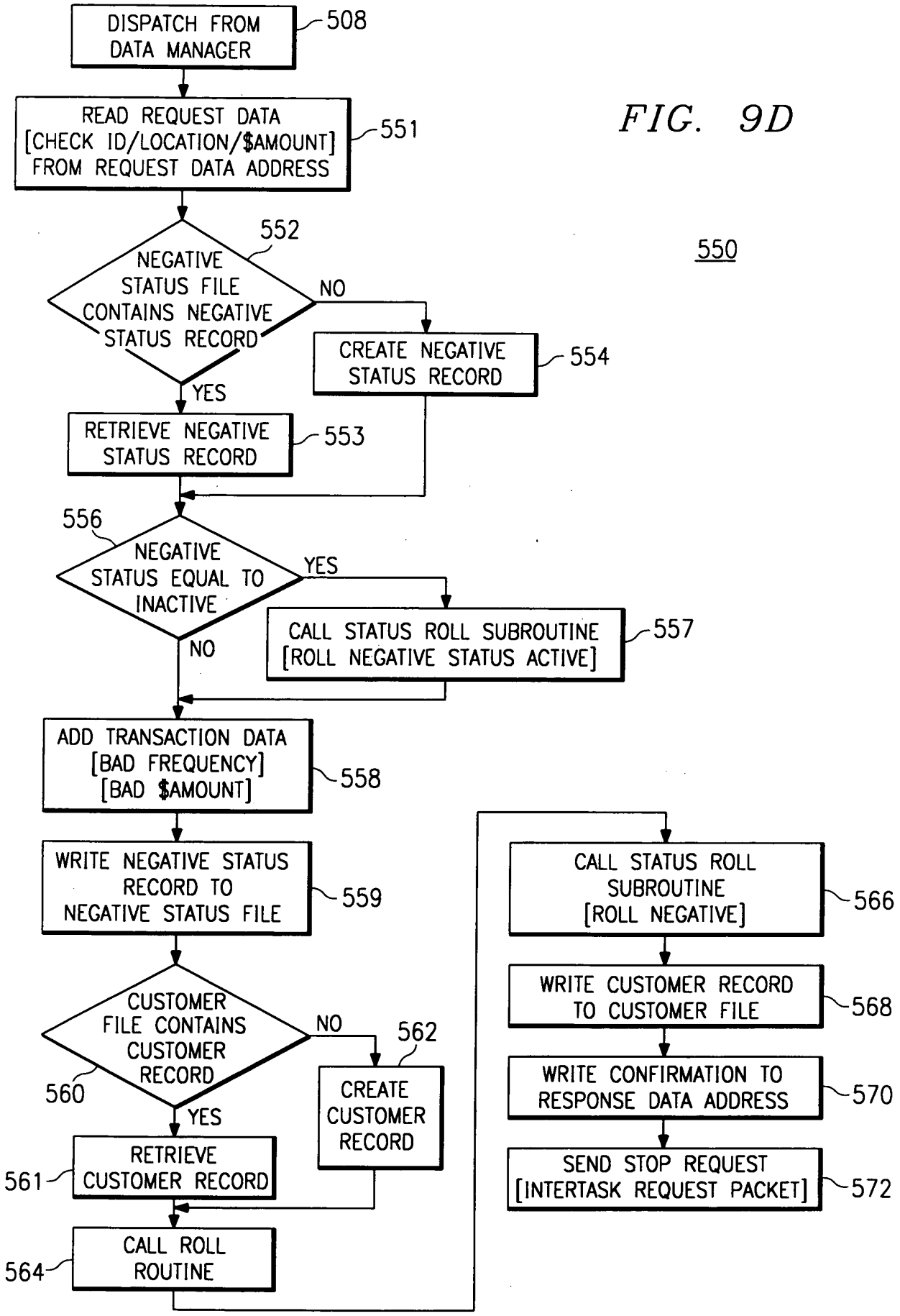
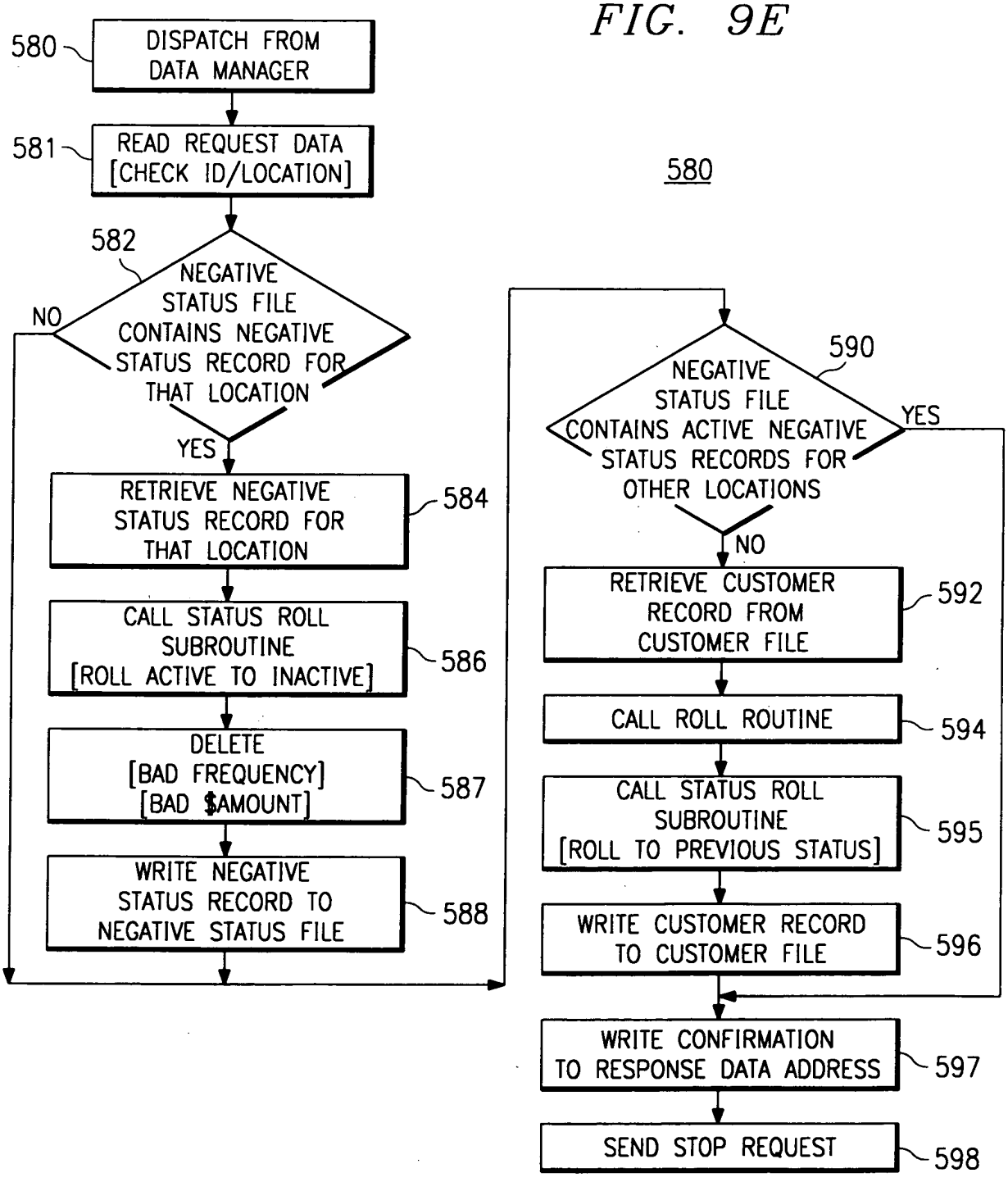

DISPATCH FROM DATA MANAGER
508
READ REQUEST DATA [CHECK ID/LOCATION/$AMOUNT] FROM REQUEST DATA ADDRESS
551
552
NEGATIVE STATUS FILE CONTAINS NEGATIVE STATUS RECORD
NO
YES
CREATE NEGATIVE STATUS RECORD
554
RETRIEVE NEGATIVE STATUS RECORD
553
556
NEGATIVE STATUS EQUAL TO INACTIVE
YES
NO
CALL STATUS ROLL SUBROUTINE [ROLL NEGATIVE STATUS ACTIVE]
557
ADD TRANSACTION DATA [BAD FREQUENCY] [BAD $AMOUNT]
558
WRITE NEGATIVE STATUS RECORD TO NEGATIVE STATUS FILE
559
CUSTOMER FILE CONTAINS CUSTOMER RECORD
560
NO
562
YES
CREATE CUSTOMER RECORD
RETRIEVE CUSTOMER RECORD
561
CALL ROLL ROUTINE
564
CALL STATUS ROLL SUBROUTINE [ROLL NEGATIVE]
566
WRITE CUSTOMER RECORD TO CUSTOMER FILE
568
WRITE CONFIRMATION TO RESPONSE DATA ADDRESS
570
SEND STOP REQUEST [INTERTASK REQUEST PACKET]
572

*FIG. 9D*

550

FIG. 9E


580
DISPATCH FROM DATA MANAGER
581
READ REQUEST DATA [CHECK ID/LOCATION]
582
NEGATIVE STATUS FILE CONTAINS NEGATIVE STATUS RECORD FOR THAT LOCATION
NO
YES
RETRIEVE NEGATIVE STATUS RECORD FOR THAT LOCATION
584
CALL STATUS ROLL SUBROUTINE [ROLL ACTIVE TO INACTIVE]
586
DELETE [BAD FREQUENCY] [BAD $AMOUNT]
587
WRITE NEGATIVE STATUS RECORD TO NEGATIVE STATUS FILE
588
580
590
NEGATIVE STATUS FILE CONTAINS ACTIVE NEGATIVE STATUS RECORDS FOR OTHER LOCATIONS
YES
NO
RETRIEVE CUSTOMER RECORD FROM CUSTOMER FILE
592
CALL ROLL ROUTINE
594
CALL STATUS ROLL SUBROUTINE [ROLL TO PREVIOUS STATUS]
595
WRITE CUSTOMER RECORD TO CUSTOMER FILE
596
WRITE CONFIRMATION TO RESPONSE DATA ADDRESS
597
SEND STOP REQUEST
598

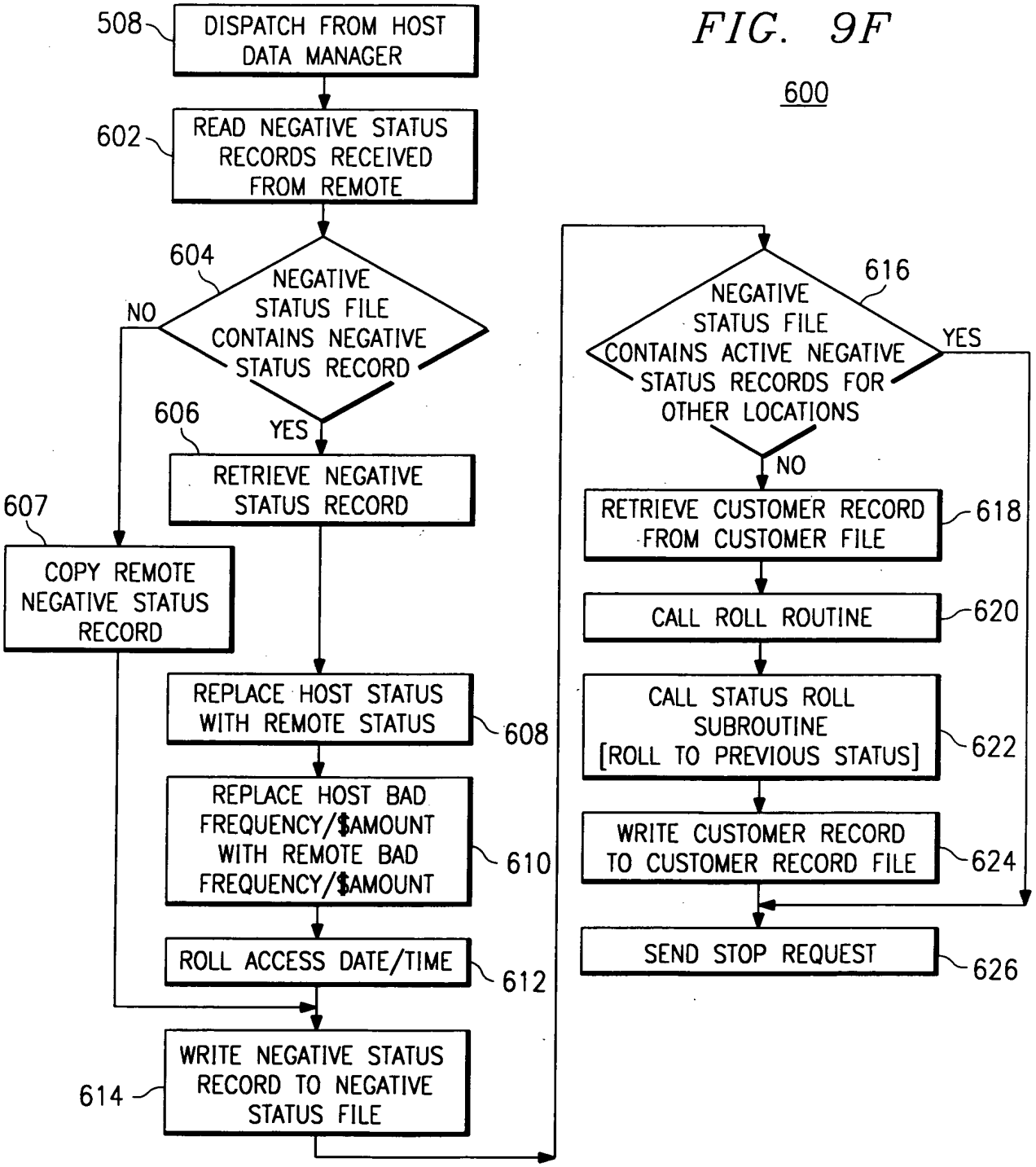

508
DISPATCH FROM HOST DATA MANAGER
602
READ NEGATIVE STATUS RECORDS RECEIVED FROM REMOTE
604
NEGATIVE STATUS FILE CONTAINS NEGATIVE STATUS RECORD
NO
YES
606
RETRIEVE NEGATIVE STATUS RECORD
607
COPY REMOTE NEGATIVE STATUS RECORD
REPLACE HOST STATUS WITH REMOTE STATUS
608
REPLACE HOST BAD FREQUENCY/$AMOUNT WITH REMOTE BAD FREQUENCY/$AMOUNT
610
ROLL ACCESS DATE/TIME
612
WRITE NEGATIVE STATUS RECORD TO NEGATIVE STATUS FILE
614
616
NEGATIVE STATUS FILE CONTAINS ACTIVE NEGATIVE STATUS RECORDS FOR OTHER LOCATIONS
YES
NO
RETRIEVE CUSTOMER RECORD FROM CUSTOMER FILE
618
CALL ROLL ROUTINE
620
CALL STATUS ROLL SUBROUTINE [ROLL TO PREVIOUS STATUS]
622
WRITE CUSTOMER RECORD TO CUSTOMER RECORD FILE
624
SEND STOP REQUEST
626

*FIG. 9F*

600

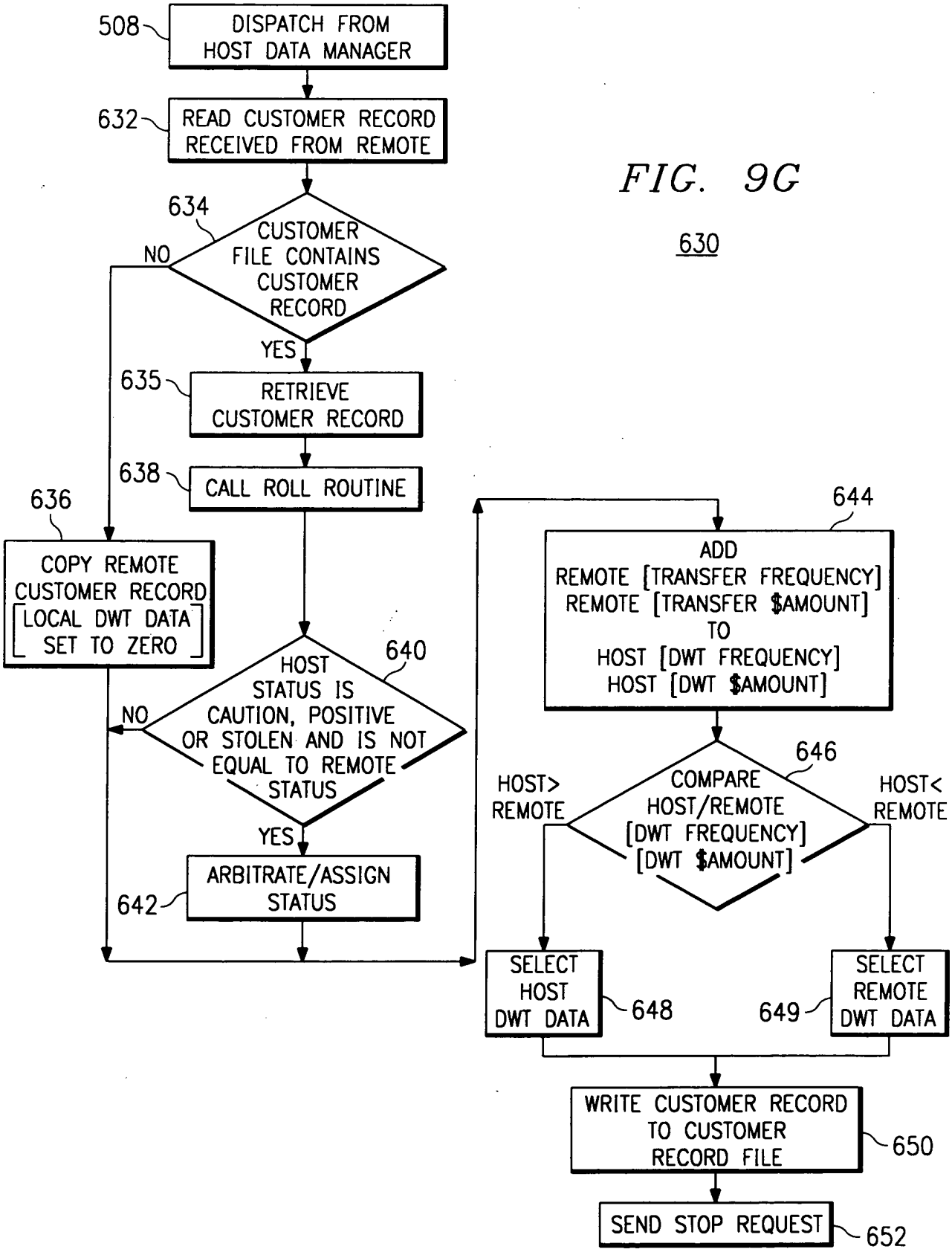

508
DISPATCH FROM HOST DATA MANAGER
632
READ CUSTOMER RECORD RECEIVED FROM REMOTE
634
CUSTOMER FILE CONTAINS CUSTOMER RECORD
NO
YES
635
RETRIEVE CUSTOMER RECORD
638
CALL ROLL ROUTINE
636
COPY REMOTE CUSTOMER RECORD [LOCAL DWT DATA SET TO ZERO]
640
HOST STATUS IS CAUTION, POSITIVE OR STOLEN AND IS NOT EQUAL TO REMOTE STATUS
NO
YES
642
ARBITRATE/ASSIGN STATUS
644
ADD REMOTE [TRANSFER FREQUENCY] REMOTE [TRANSFER $AMOUNT] TO HOST [DWT FREQUENCY] HOST [DWT $AMOUNT]
646
COMPARE HOST/REMOTE [DWT FREQUENCY] [DWT $AMOUNT]
HOST> REMOTE
HOST< REMOTE
SELECT HOST DWT DATA
648
SELECT REMOTE DWT DATA
649
WRITE CUSTOMER RECORD TO CUSTOMER RECORD FILE
650
SEND STOP REQUEST
652

*FIG. 9G*

630

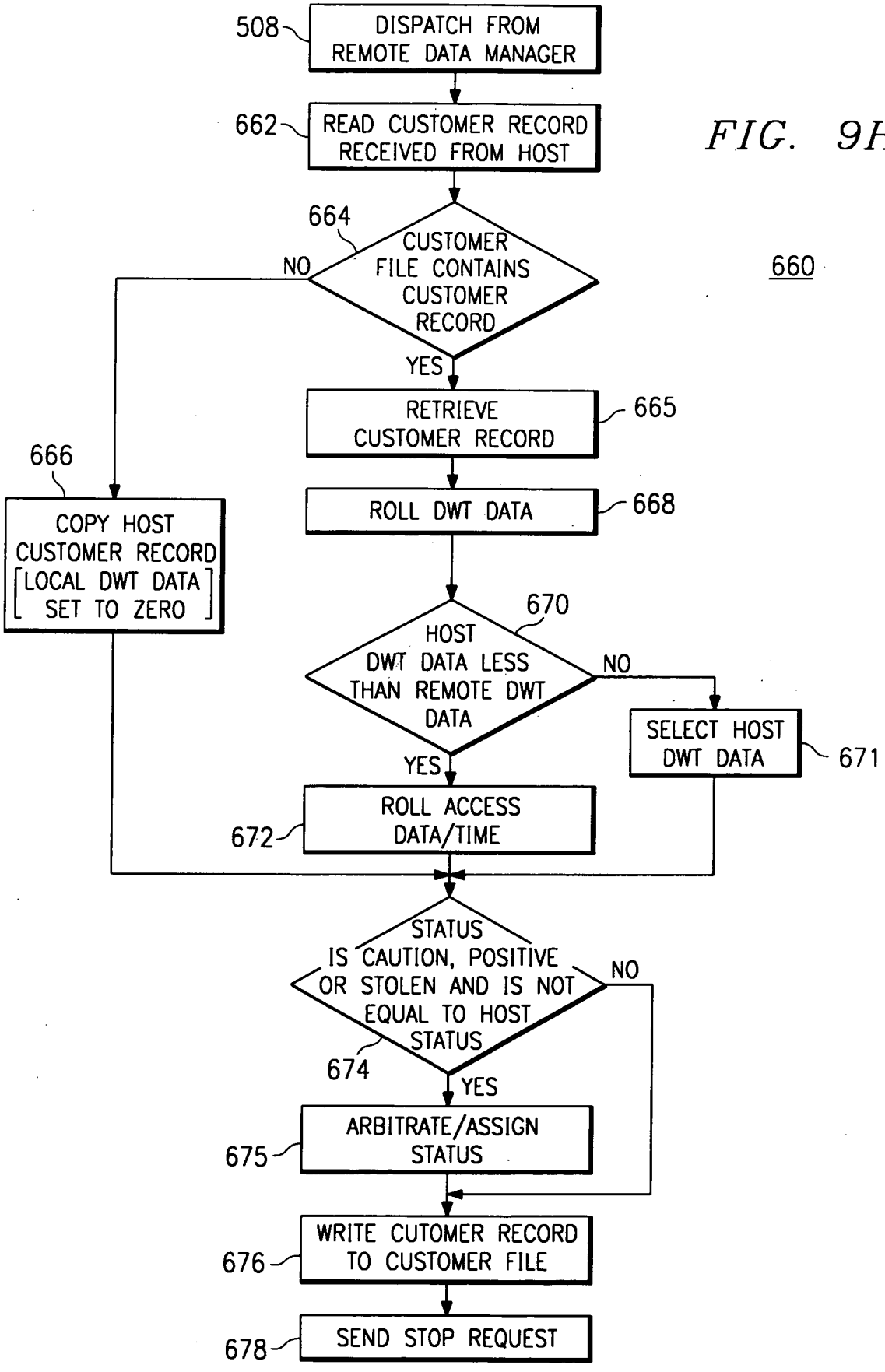

508
DISPATCH FROM REMOTE DATA MANAGER
662
READ CUSTOMER RECORD RECEIVED FROM HOST
664
CUSTOMER FILE CONTAINS CUSTOMER RECORD
NO
YES
660
665
RETRIEVE CUSTOMER RECORD
666
COPY HOST CUSTOMER RECORD [LOCAL DWT DATA SET TO ZERO]
668
ROLL DWT DATA
670
HOST DWT DATA LESS THAN REMOTE DWT DATA
NO
YES
671
SELECT HOST DWT DATA
672
ROLL ACCESS DATA/TIME
STATUS IS CAUTION, POSITIVE OR STOLEN AND IS NOT EQUAL TO HOST STATUS
NO
674
YES
675
ARBITRATE/ASSIGN STATUS
676
WRITE CUTOMER RECORD TO CUSTOMER FILE
678
SEND STOP REQUEST

*FIG. 9H*

*FIG. 10A*

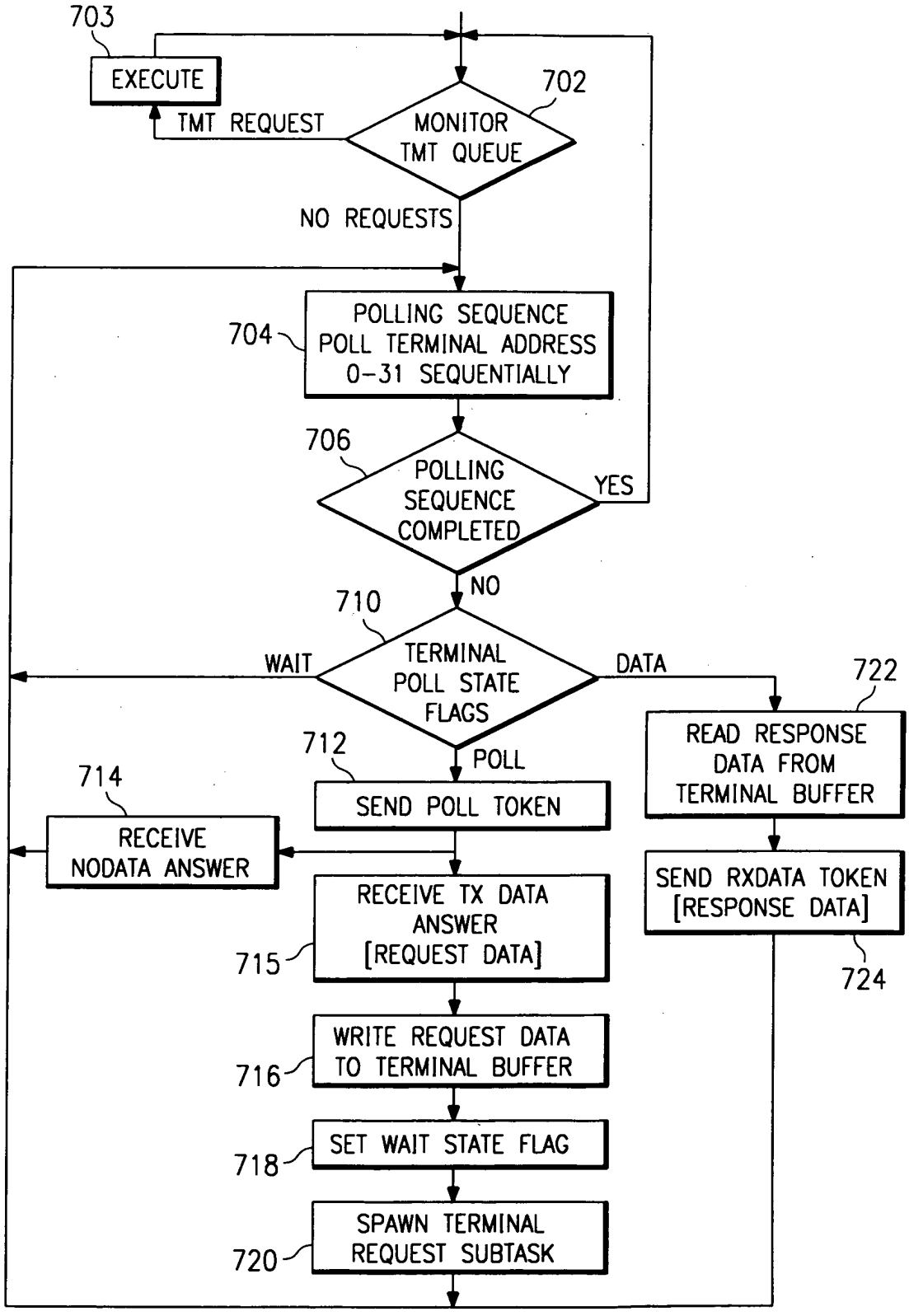

703
EXECUTE
TMT REQUEST
702
MONITOR TMT QUEUE
NO REQUESTS
704
POLLING SEQUENCE POLL TERMINAL ADDRESS 0-31 SEQUENTIALLY
706
POLLING SEQUENCE COMPLETED
YES
NO
710
TERMINAL POLL STATE FLAGS
WAIT
DATA
722
READ RESPONSE DATA FROM TERMINAL BUFFER
712
POLL
SEND POLL TOKEN
714
RECEIVE NODATA ANSWER
RECEIVE TX DATA ANSWER [REQUEST DATA]
715
SEND RXDATA TOKEN [RESPONSE DATA]
724
WRITE REQUEST DATA TO TERMINAL BUFFER
716
SET WAIT STATE FLAG
718
SPAWN TERMINAL REQUEST SUBTASK
720

*FIG. 10B*

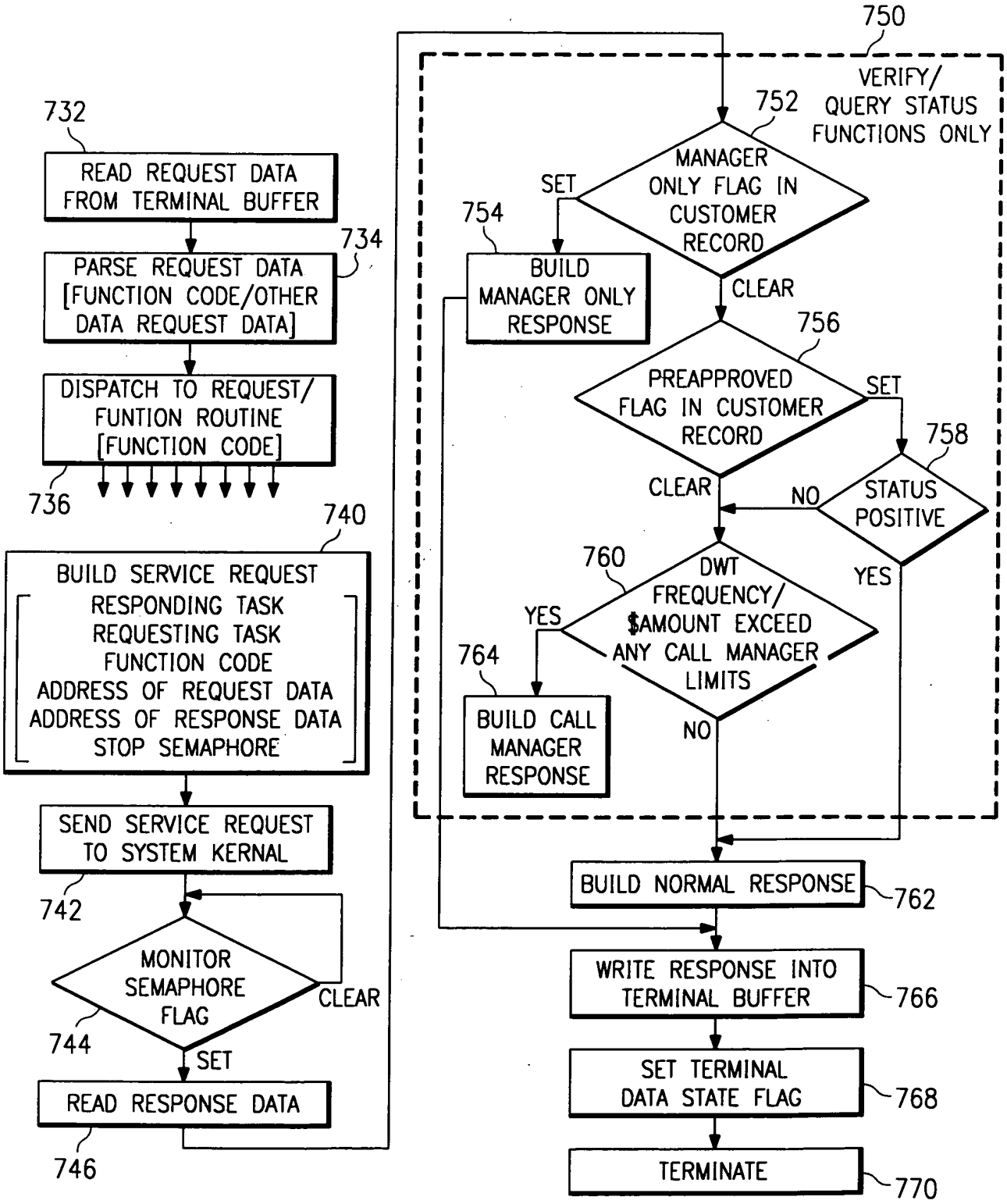

732
READ REQUEST DATA FROM TERMINAL BUFFER
734
PARSE REQUEST DATA [FUNCTION CODE/OTHER DATA REQUEST DATA]
DISPATCH TO REQUEST/ FUNTION ROUTINE [FUNCTION CODE]
736
740
BUILD SERVICE REQUEST
RESPONDING TASK
REQUESTING TASK
FUNCTION CODE
ADDRESS OF REQUEST DATA
ADDRESS OF RESPONSE DATA
STOP SEMAPHORE
SEND SERVICE REQUEST TO SYSTEM KERNAL
742
MONITOR SEMAPHORE FLAG
744
CLEAR
SET
READ RESPONSE DATA
746
750
VERIFY/ QUERY STATUS FUNCTIONS ONLY
752
MANAGER ONLY FLAG IN CUSTOMER RECORD
SET
754
BUILD MANAGER ONLY RESPONSE
CLEAR
756
PREAPPROVED FLAG IN CUSTOMER RECORD
SET
758
STATUS POSITIVE
NO
CLEAR
YES
760
DWT FREQUENCY/ $AMOUNT EXCEED ANY CALL MANAGER LIMITS
YES
764
BUILD CALL MANAGER RESPONSE
NO
BUILD NORMAL RESPONSE
762
WRITE RESPONSE INTO TERMINAL BUFFER
766
SET TERMINAL DATA STATE FLAG
768
TERMINATE
770

*FIG. 11A*

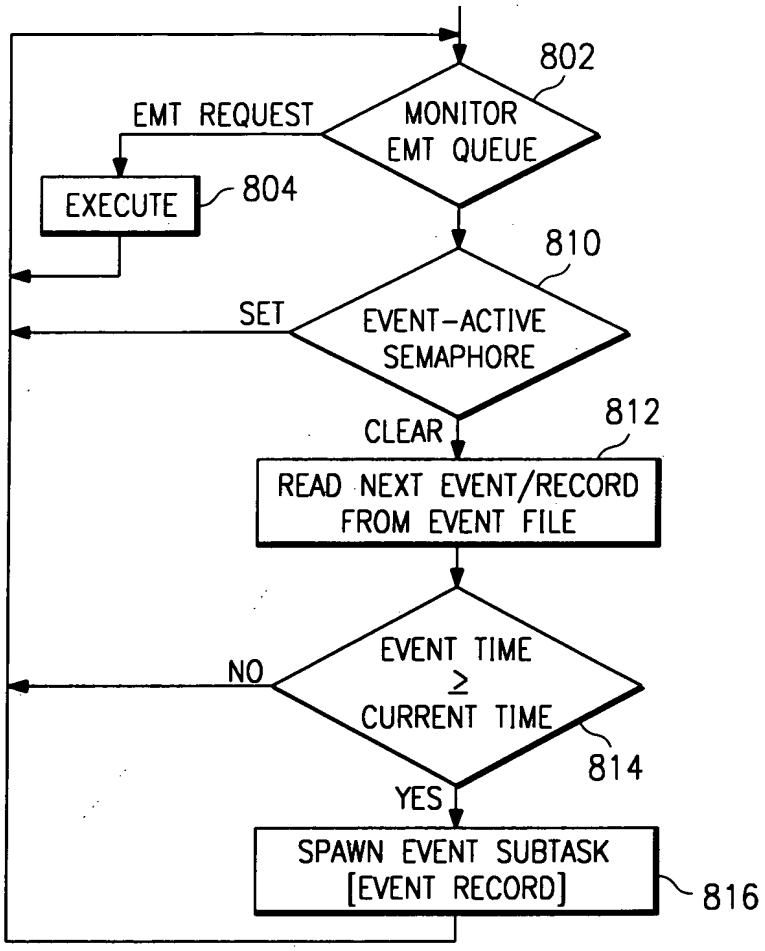
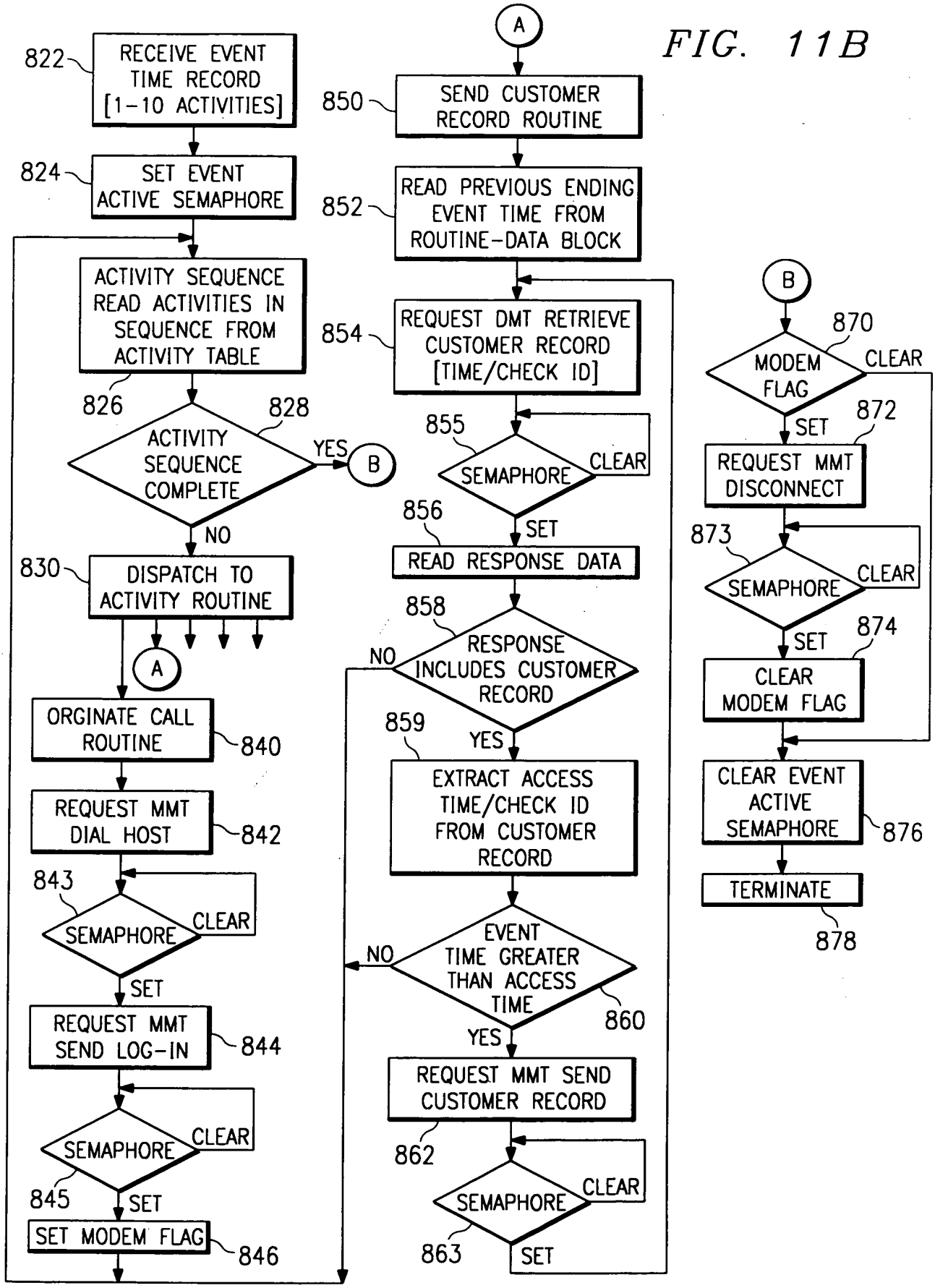

802
MONITOR EMT QUEUE
EMT REQUEST
EXECUTE
804
810
EVENT-ACTIVE SEMAPHORE
SET
CLEAR
812
READ NEXT EVENT/RECORD FROM EVENT FILE
EVENT TIME ≥ CURRENT TIME
NO
814
YES
SPAWN EVENT SUBTASK [EVENT RECORD]
816

FIG. 11B


822
RECEIVE EVENT TIME RECORD [1-10 ACTIVITIES]
824
SET EVENT ACTIVE SEMAPHORE
ACTIVITY SEQUENCE READ ACTIVITIES IN SEQUENCE FROM ACTIVITY TABLE
826
828
ACTIVITY SEQUENCE COMPLETE
YES
B
NO
830
DISPATCH TO ACTIVITY ROUTINE
A
ORGINATE CALL ROUTINE
840
REQUEST MMT DIAL HOST
842
843
SEMAPHORE
CLEAR
SET
REQUEST MMT SEND LOG-IN
844
SEMAPHORE
CLEAR
845
SET
SET MODEM FLAG
846
A
850
SEND CUSTOMER RECORD ROUTINE
852
READ PREVIOUS ENDING EVENT TIME FROM ROUTINE-DATA BLOCK
854
REQUEST DMT RETRIEVE CUSTOMER RECORD [TIME/CHECK ID]
855
SEMAPHORE
CLEAR
SET
856
READ RESPONSE DATA
858
RESPONSE INCLUDES CUSTOMER RECORD
NO
859
YES
EXTRACT ACCESS TIME/CHECK ID FROM CUSTOMER RECORD
EVENT TIME GREATER THAN ACCESS TIME
NO
860
YES
REQUEST MMT SEND CUSTOMER RECORD
862
SEMAPHORE
CLEAR
863
SET
B
870
MODEM FLAG
CLEAR
SET
872
REQUEST MMT DISCONNECT
873
SEMAPHORE
CLEAR
SET
874
CLEAR MODEM FLAG
CLEAR EVENT ACTIVE SEMAPHORE
876
TERMINATE
878

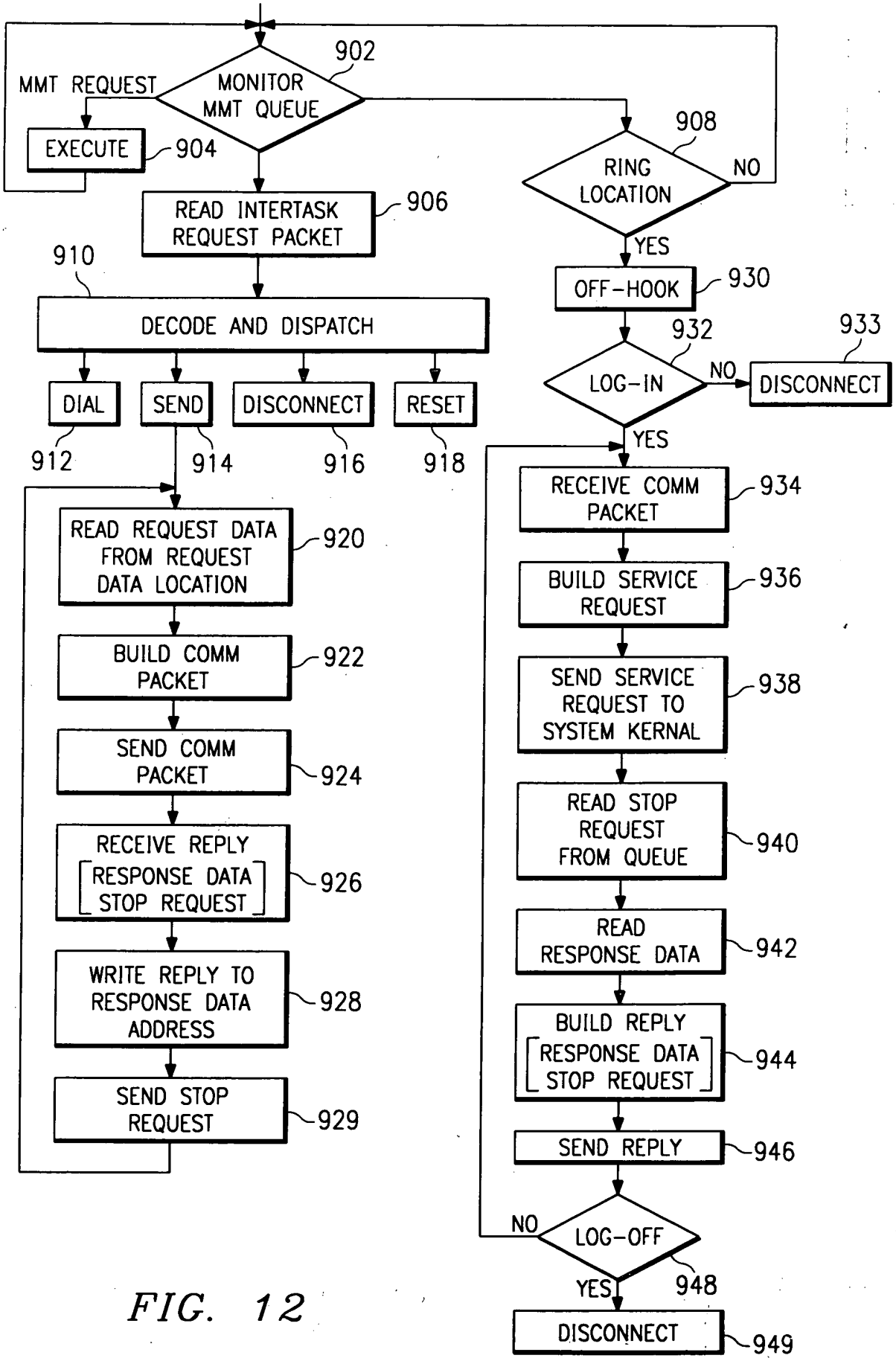

902
MONITOR MMT QUEUE
MMT REQUEST
EXECUTE
904
READ INTERTASK REQUEST PACKET
906
910
DECODE AND DISPATCH
DIAL
SEND
DISCONNECT
RESET
912
914
916
918
READ REQUEST DATA FROM REQUEST DATA LOCATION
920
BUILD COMM PACKET
922
SEND COMM PACKET
924
RECEIVE REPLY [RESPONSE DATA STOP REQUEST]
926
WRITE REPLY TO RESPONSE DATA ADDRESS
928
SEND STOP REQUEST
929
908
RING LOCATION
NO
YES
OFF-HOOK
930
932
LOG-IN
NO
933
DISCONNECT
YES
RECEIVE COMM PACKET
934
BUILD SERVICE REQUEST
936
SEND SERVICE REQUEST TO SYSTEM KERNAL
938
READ STOP REQUEST FROM QUEUE
940
READ RESPONSE DATA
942
BUILD REPLY [RESPONSE DATA STOP REQUEST]
944
SEND REPLY
946
NO
LOG-OFF
YES
948
DISCONNECT
949

*FIG. 12*